Historic, archived document

Do not assume content reflects current
scientific knowledge, policies, or practices.

A381
R31A-L
Cop. 2

LIBRARY
NOV 4 1955
U S DEPARTMENT OF AGRICULTURE

ARS-74-5

SEMIANNUAL LIST OF PUBLICATIONS AND PATENTS WITH ABSTRACTS

Western Utilization Research Branch
Agricultural Research Service
United States Department of Agriculture

JANUARY 1 TO JUNE 30, 1955

Contents

WESTERN REGIONAL RESEARCH LABORATORY, Albany 10, California
ANALYTICAL AND GENERAL
FIELD CROPS--Alfalfa, Rice
Sugar Beets
FRUIT AND PECTIN
PHARMACOLOGY
POULTRY PRODUCTS
VEGETABLES
WOOL
FRUIT AND VEGETABLE CHEMISTRY LABORATORY, Pasadena 5, Calif.
FRUIT AND VEGETABLE PRODUCTS LABORATORY, Prosser, Washington

This list of abstracts of publications and patents provides information on progress of research in this Branch. If additional information on any particular subject is desired, please write us.

Earlier semiannual lists are available on request. A limited number of reprints of journal articles listed are available, usually for about a year following publication.

The asterisk (*) designates a title of which we have no supply. Photostat copies of journal articles can be purchased at nominal cost from the Library of the United States Department of Agriculture, Washington 25, D. C.

Patents can be obtained only by purchase from the United States Patent Office, Washington, D. C., for 25 cents each.

If your address should be changed or if you no longer care to receive this list, will you notify us so that we can conduct our dissemination of information more efficiently.

OTHER LISTS

Lists of publications and patents with abstracts (similar to this one) from other Regional Utilization Research Branches of the Agricultural Research Service, U. S. Department of Agriculture, are available on request: Addresses are as follows:

Eastern Utilization Research Branch
Chestnut Hill Station, Philadelphia 18, Pa.

Northern Utilization Research Branch
825 North University St., Peoria 5, Ill.

Southern Utilization Research Branch
2100 Robert E. Lee Blvd., New Orleans 19, La.

ANALYTICAL AND GENERAL

(Other analytical papers related to specific commodities are included in later sections.)

PROBLEMS IN HANDLING RAW COMMODITIES IN FOOD PROCESSING PLANTS. D. G. Sorber, Food Technol. 9(1):34-37, Jan. 1955. Recent improvements in such phases as containers, conveying, quality appraisal, storage, grading, cleaning, and preparation for processing are reviewed. Thirty-eight references are cited.

FERMENTATION OF SUGARS BY AN ULTRAMICRO TECHNIQUE PRIOR TO PAPER CHROMATOGRAPHY. K. T. Williams and A. Bevenue, Analyt. Chem. 27(2):331, Feb. 1955. A procedure for fermenting very small volumes of sugar solutions with commercial bakers' yeasts is described, as a supplement to ultramicro techniques for paper chromatography.

TECHNIQUE FOR CONTINUOUS INTENSITY STANDARDIZATION IN QUANTITATIVE ANALYSIS BY NUCLEAR MAGNETIC ABSORPTION. R. H. Elsken and T. M. Shaw, Analyt. Chem. 27(2): 290-92, Feb. 1955. A report on intensity measurements and specifically on a method that utilizes an electronic standard of reference, and greatly reduces the stability requirements of many components in the spectrometer and associated circuits.

TECHNIQUES FOR NUCLEAR MAGNETIC RESONANCE MEASUREMENTS ON GRANULAR HYGROSCOPIC MATERIALS. T. M. Shaw and R. H. Elsken, Jour. Applied Physics 26(3):313-17, March 1955. An investigation was made of the effects of nonuniformity in the magnetic fields and in the test specimens employed in the measurement of nuclear magnetic resonance absorption. A technique applicable for the low moisture range was tested for materials containing 7 to 16 percent water and was found to be satisfactory.

REPORT ON SUGARS IN PLANTS. K. T. Williams and E. F. Potter, Jour. Offic. Agr. Chem. 38(2):401-03, May 1955. It was found that sugar could be extracted quantitatively from certain vegetables without soxhlet extraction, thereby saving the analyst considerable time.

TEMPERATURE TOLERANCE IN FROZEN FOOD PROCESSING. S. Schwimmer, L. L. Ingraham, and H. M. Hughes (with Univ. Calif.), Indus. and Engin. Chem. 47(6):1149-51, June 1955. A theory is presented which permits calculation of reaction rates and effective temperatures in some simple periodically fluctuating temperature systems, where the reactions have known constant temperature coefficients in the range of interest. This theory may be of value in industrial processes where temperature fluctuations affect the final product.

MICROSCOPIC IDENTIFICATION OF MICROGRAM QUANTITIES OF D-FRUCTOSE. DIRECT SYNTHESIS OF THE CRYSTALLINE 2,4-DINITROPHENYLHYDRAZONE BY A SOLVENT DIFFUSION TECHNIQUE. L. M. White and G. E. Secor, Indus. and Engin. Chem. 27(6):1016-18, June 1955. A simple test is described for identifying as little as 0.5 microgram of pure or 10 micrograms of chromatographically separated D-fructose by direct synthesis and microscopic observation of crystalline D-fructose 2,4-dinitrophenylhydrazone dioxane solvate. Less sensitive and less rapid tests are also given by L-fucose, D-galactose, D-mannose, and L-arabinose.

D-FRUCTOSE 2,4-DINITROPHENYLHYDRAZONE PYRIDINE SOLVATE. F. T. Jones, D. R. Black, and L. M. White, Analyt. Chem. 27(7):1203-04, July 1955. Data on morphology, X-ray diffraction, and optical properties of the crystals are reported.

SIMULTANEOUS HEAT- AND MASS-TRANSFER IN A NON-ISOTHERMAL SYSTEM. THROUGH-FLOW DRYING IN THE LOW MOISTURE RANGE. W. B. Van Arsdel, Chem. and Engin. Progress Symposium, Series No. 16, p. 47-58, 1955. A basic theory of the behavior of through-flow driers, both batch and continuous, is developed for the special case in which the rate-controlling factor for drying is internal diffusional resistance in the material. Computational techniques are explored by solution of numerical examples.

*PHOTOMETRIC DEVICE FOR MEASURING THE COLOR OF OBJECTS. Patent 2,701,502, to H. C. Lukens and R. P. MacKenzie, Feb. 8, 1955. The device includes means for irradiating an object with a beam of light of alternating colors, such as red and blue in the case of measuring the color of corn. The light reflected from the object is transformed into an electrical signal by photoelectric tubes. This signal is amplified and translated into visual information such as a reading on a milliammeter thus to furnish a reading which is correlated with the maturity of the sample. The device can be used for sorting fruits or vegetables according to maturity or for determining the degree of browning, heat damage, etc.

FIELD CROPS--Alfalfa, Rice, Sugar Beets

Alfalfa

ALFALFA CAROTENE. EFFECT OF ADDED ANIMAL FATS AND VEGETABLE OILS ON STABILITY OF CAROTENE IN DEHYDRATED ALFALFA MEAL. E. M. Bickoff, C. R. Thompson, A. L. Livingston, G. R. Van Atta, and J. Guggolz, Jour. Agr. and Food Chem. 3(1): 67-69, Jan. 1955. Increasing amounts of fat or oil from 1 to 5 percent in dehydrated alfalfa meal increased the stability of carotene, reduced dustiness, and gave a greener-appearing alfalfa meal but had little effect on stability of green color. Fat and oil containing 5, 15, and 40 percent of free fatty acid gave essentially the same effect as materials which contained little of these acids.

REACTION OF BROMINE-WATER WITH ALFALFA SAPONIN. A. Bevenue and K. T. Williams, Science 121(3134):106, Jan. 1955. In this reaction the bromine color quickly faded and a white precipitate formed. The experimental data indicate that the bromine water cleaves sugars from alfalfa saponins in the form of 3 sugar polymers, leaving a residue containing glucose.

BISPHENOL DERIVATIVES AS ANTIOXIDANTS FOR CAROTENE. E. M. Bickoff, A. L. Livingston, and C. R. Thompson, Jour. Amer. Oil Chem. Soc. 32(2):64-68, Feb. 1955. Relative values for the carotene-stabilizing effects in mineral oil solutions of a number of bisphenol derivatives were determined and reported. Certain relationships between molecular structure and antioxidant activity were observed.

ALFALFA CAROTENOIDS. EFFECT OF ADDED ANIMAL FATS AND ANTIOXIDANT ON STABILITY OF XANTHOPHYLL CONCENTRATES IN MIXED FEEDS. A. L. Livingston, E. M. Bickoff, and C. R. Thompson, Jour. Agr. and Food Chem. 3(5):439-441, May 1955. The stability of carotenoids in four commercial concentrates was evaluated. Addition of animal fats or an antioxidant, 6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline, improved retention of carotenoids in mixed feeds. Use of the two together was more effective than either one used separately. Complete stabilization of xanthophyll concentrates was achieved by storage in filled sealed containers.

*STABILIZED FORAGE PRODUCTS. Patent 2,711,962 to E. M. Bickoff, June 28, 1955. Alfalfa or other forage material is treated with a minor amount of 7-chloro, 2,2,4-trimethyl-1,2-dihydroquinoline. This agent acts as an antioxidant and greatly reduces the loss of carotene on storage of the forage material.

Rice

COMPARISON OF AERATION, TURNING, AND FLAT STORAGE AS MEANS OF MAINTAINING QUALITY OF WESTERN-GROWN RICE. A PRELIMINARY REPORT. E. B. Kester, K. W. Taylor, and D. C. Finfrock, Rice Jour. 58(4):12, 14, 16, April 1955 (with Univ. Calif.). Bin-scale storage experiments of Western-grown rough rice during 1953-54 indicate that aeration or turning may be more important factors in maintaining quality than moisture content. Rice stored at moisture levels of 11.0, 13.5, and 15.6 percent when aerated or turned retained U.S. No. 1 grade for 9 months to August 1, whereas rice of the same moisture contents in flat storage deteriorated to U.S. No. 2 in 7 months to June 1.

ADSORPTION-DIALYSIS, AN EXTRACTION TECHNIQUE AND ITS USE IN RECOVERY OF AMINO ACIDS. I. R. Hunter, D. F. Houston, and E. B. Kester, Analyt. Chem. 27(6): 965-68, June 1955. An extraction procedure useful for recovering amino compounds from biological materials is described, which involves the combined use of adsorption and dialysis.

Sugar Beets

BEET SUGAR TECHNOLOGY. APPLICATION OF COMPOSITIONAL KNOWLEDGE TO BEET SUGAR TECHNOLOGY. H. S. Owens, J. B. Stark, A. E. Goodban, and H. G. Walker, Jr., Jour. Agr. and Food Chem. 3(4):350-53, April 1955. Investigations of the composition of beets and their processing liquors have been under way for about 5 years. Results of these studies and their significance in beet technology are reviewed.

FRUIT AND PECTIN

A LABORATORY FRUIT-ESSENCE RECOVERY UNIT. L. H. Walker and D. C. Patterson, Food Technol. 9(2):87-89, Feb. 1955. Design and operation of a small but effective laboratory essence recovery unit are described. The unit has been useful in examining volatile flavor components in fruit juices and in determining degrees of evaporation suitable for recovery of their components from various fruit juices.

FACTORS AFFECTING CHARACTER GRADE OF FROZEN STRAWBERRIES. W. F. Talburt, L.R. Leinbach, J. E. Brekke, and R. O. McHenry, Food Technol. 9(3):111-13, March, 1955 (with Agricultural Marketing Service, USDA). Samples of frozen sliced strawberries were graded and analyzed for sugar, acid, and total solids to ascertain effects of maturity and type of processing equipment on character, color, and ratio of constancy of fill of fruit to packing medium.

PLANT TISSUE ANALYSES. TEST FOR PECTIN BASED ON REACTION OF HYDROXAMIC ACIDS WITH FERRIC ION. R. M. McCready and R. M. Reeve, Jour. Agr. and Food Chem. 3(3):260-62, March, 1955. Reaction of the ester groups in pectin with aqueous alkaline hydroxylamine at room temperature for 2 minutes produces hydroxamic acids. These reactions serve satisfactorily as a histochemical test for pectin in plant tissues and as a qualitative test for pectic substances. The test seems specific for pectin under the conditions recommended.

ACTION OF TOMATO AND AVOCADO POLYGALACTURONASE. R. M. McCready, E. A. McComb, and E. F. Jansen, Food Res. 20(2):186-191, March-April 1955. The action of tomato and avocado enzyme preparations on polygalacturonic acids was compared with that of fungal polygalacturonase. Fungal, tomato, and avocado preparations hydrolyzed polygalacturonic acid and also tri- and di-galacturonic acid to galacturonic acids. Rate of hydrolysis of di-galacturonic acid is much lower with fruit enzymes than with a preparation of fungal origin.

REACTION INACTIVATION OF POLYPHENOL OXIDASE: CATECHOL AND OXYGEN DEPENDENCE. L. L. Ingraham, Jour. Amer. Chem. Soc. 77(10):2875-76, May 1955. Further studies have shown that both the reaction inactivation and enzymatic oxidation of catechol have the same Michaelis-Menten dependence on catechol concentration and oxygen pressure. Results show that the enzyme-semiquinone complex may decompose by either of two pathways: (1) to active enzyme and semiquinone or (2) to inactive enzyme.

CHRONOMETRIC METHOD OF DETERMINING POLYPHENOL OXIDASE ACTIVITY. A POTENTIOMETRIC DEVICE FOR AUTOMATIC DETERMINATION OF THE ENDPOINT. L. L. Ingraham and B. Makower, Analyt. Chem. 27(6):916-18, June 1955. A potentiometric device has been developed to determine the chronometric endpoint in the estimation of polyphenoloxidase activity. The equipment essentially consists of a very sensitive mechanical relay which turns off an electric clock when all of a known quantity of ascorbic acid has been oxidized in the presence of catechol. An improved graphical method is suggested for the calculation of enzyme activity with several ascorbic acid concentrations.

STUDIES OF THE CHARACTERISTICS OF PRUNES AS RELATED TO DATE OF HARVEST. J.H. Kilbuck (contract research conducted by Univ. Calif., Davis) (mimeographed by Univ. Calif.), July, 1954. Analytical data on freshly harvested and dehydrated prunes (including vitamin data on the latter) were obtained to provide new information on relationships of harvest practices to quality of product. It was concluded that best average quality results from beginning harvest about 7 to 10 days after disappearance of chlorophyll and when soluble-solids content has reached about 24 percent--if it is necessary to harvest over a period of 3 weeks.

*SIRUP TREATMENT OF APPLES. Patent 2,702,248 to D. G. Guadagni, Feb. 15, 1955. Apple slices are subjected to vacuum while immersed in sugar sirup whereby the air in the apple tissue is replaced by sirup. This treatment used prior to regular freezing yields a product which is firmer upon thawing than ordinary frozen slices and reduces the amount of liquid which exudes from the fruit upon thawing.

*DEHYDRATION OF BIOLOGICAL MATERIALS. Patent 2,710,810 to S. I. Strashun, June 14, 1955. Microbial cultures (bacteria, yeasts, fungi, etc.) grown for production of foods, feeds, therapeutic materials, etc. are dehydrated by concentrating the culture then exposing a layer of the concentrate to heat and vacuum whereby to obtain the dehydrated product with a minimum of damage to heat-labile components such as vitamins and antibiotics.

PHARMACOLOGY

MONOCHLOROACETATE: EFFECTS OF CHRONIC ADMINISTRATION TO RATS ON GROWTH, ACTIVITY, AND TISSUE METABOLISM AND INHIBITORY EFFECTS IN VITRO COMPARED WITH MONOIODOACETATE AND MONOBROMOACETATE. F. A. Fuhrman, J. Field, R. H. Wilson, and F. DeEds (with Stanford Univ.), Arch. Internat. Pharmacodynamie et de Therapie, Vol. CII, No. 1-2, 113-125, June 1955. Data are reported on (a) effect of long-term feeding at varying dosage levels, (b) effect on activity in running cages, (c) effect on liver glycogen and on oxygen consumption of samples of liver, cerebral cortex, kidney cortex, and skeletal muscle. In vitro effects of the three halogenated acetic acids on oxygen consumption and glycolysis of rat cerebral cortex and liver were compared.

COMPARATIVE RATE OF ABSORPTION AND DIGESTION OF ACETOGLYCERIDES (abstract). D. J. Robbins and A. M. Ambrose, Fed. Proc. 14(1, pt. I):382, March 1955. The studies reported compare the absorption and digestibility of acetostearin, aceto-olein, mixtures of acetostearin and aceto-olein, and hydrogenated vegetable oil.

TOXICITY STUDIES ON PEAR POMACE CONTAINING A MIXTURE OF INSECTICIDE RESIDUES (abstract). R. H. Wilson, G. W. Poley, and F. DeEds, Fed. Proc. 14(1, pt. I): 394, March 1955. Pear pomaces prepared from fruit of several orchards having known and controlled spray programs were mixed to obtain the highest possible level of each residue of lead, arsenic, fluorine, and DDT. Rats were fed diets containing 10, 20, and 30 percent of the composite pomace for 315 days. None of the symptoms characteristic of these insecticidal residues developed.

TOXICOLOGICAL STUDIES ON ACETOGLYCERIDES (abstract). A. M. Ambrose and D. J. Robbins, Fed. Proc. 14(1, pt. I):314, March 1955. The feeding of pure acetostearin up to 4 percent of the rat diet and pure aceto-olein up to 1 percent of the diet for over 1 year, as well as the feeding of commercially prepared products in concentrations of 5 or 10 percent of the diet for 86 weeks, did not interfere with growth or food utilization.

EFFECTS OF RUTIN ON EXPERIMENTAL COLD INJURY (abstract). A. M. Ambrose, F. DeEds, and P. V. Marsh, Fed. Proc. 14(1, pt. I):314, March 1955. Rats fed on diets with and without rutin or deficient in pantothenic acid or ascorbic acid showed little or no effect. However, on diets deficient in vitamin A, rutin showed a protective effect against cold. In guinea pigs rutin had no effect in prolonging survival.

METABOLIC FATE OF RUTIN AND QUERCETIN (abstract). A. N. Booth, C. W. Murray, F. DeEds, and F. T. Jones, Fed. Proc. 14(1, pt. I):321, March 1955. Following oral administration of these compounds the quercetin molecule is split to yield 3,4-dihydroxyphenyl acetic acid, part of which loses a hydroxyl group to form meta-hydroxyphenyl acetic acid, while another portion is methylated to give homovanillic acid.

METHYLATION OF PHENOLIC HYDROXYL GROUPS BY THE RABBIT (abstract). F. DeEds, A. N. Booth, and F. T. Jones, Fed. Proc. 14(1, Pt. 1):332, March 1955. The oral administration of various 3,4-dihydroxylphenyl compounds to rabbits results in the urinary excretion of compounds in which the number 3 hydroxyl group has been methylated.

POULTRY PRODUCTS

STARCHY CEREAL THICKENING AGENTS FOR CANNED FOOD PRODUCTS. J. G. Davis, J. H. Anderson, and H. L. Hanson, Food Technol. 9(1):13-17, Jan. 1955. For utility as thickening agents in canned foods, pastes made from wheat flour, cornstarch, waxy-rice flour, waxy cornstarch, waxy-corn flour, and waxy-sorghum flour have been investigated. Use of the waxy-cereal thickenings and mixtures of waxy and nonwaxy were found to contribute greater storage stability to the foods than use of wheat flour or cornstarch alone. Waxy-rice flour was most effective in reduction of "setting up" and liquid separation of the pastes.

SENSORY TEST METHODS. II. EFFECT OF PREVIOUS TESTS ON CONSUMER RESPONSE TO FOODS. H. L. Hanson, J. G. Davis, A. A. Campbell, J. H. Anderson, and H. Lineweaver, Food Technol. 9(2):56-59, Feb. 1955. The fact that when a consumer tests foods by tasting, he is influenced in his decision by previously tasted samples of the same food has been demonstrated. This influence occurs when two days elapse between tests, as well as when the interval is only two minutes. This demonstration shows that planning and interpretation of consumer-response tests must take previous experience into consideration.

THE FUNCTIONAL PROPERTIES OF THE EGG WHITE PROTEINS. L. R. MacDonnell, R. E. Feeney, H. L. Hanson, A. Campbell, and T. F. Sugihara, Food Technol. 9(2):49-53, Feb. 1955. Chemical fractionation of egg white into its principal protein constituents has shown the contribution of each to the performance of egg white in the preparation of angel cakes. The constituents found to be important are globulins (including lysozyme), ovomucin, and ovalbumin. The globulin fraction is in large part responsible for good foaming, while ovomucin appears to stabilize the foam.

VIRUS ANTIHEMAGGLUTININ ACTIVITIES OF AVIAN EGG COMPONENTS. T. F. Sugihara, L. R. MacDonnell, C. A. Knight, and R. E. Feeney, Biochimica et Biophysica Acta, 16(3):404-409, March 1955. This report includes an assay method for antihemagglutinin activity, activities of different structures of chicken egg, activities of albumens of several other avian species, and inactivation of AH activity by incubation with several different viruses.

*SUBSCALDING TURKEY. A. A. Klose, Indus. Refrig. 128(4):54, April 1955. A review of problems in freezing and frozen storage of subscalded turkeys. Rapid handling and freezing is a major measure in the protection of appearance of frozen birds.

*POULTRY MEAT AND EGGS IN THE DIET. H. Lineweaver and A. A. Klose, in Poultry Products, Handbook of Food and Agriculture, Chapter 20, Reinhold Pub. Co., General Editor Fred C. Blanck, pp. 617-39, 1955. A summary of recent advances in basic knowledge of poultry products (meat and eggs). The studies reviewed have been concerned with chemical and microbiological problems related to nutritional values of meat and eggs, as well as to new-product and improved-product development in the poultry industries. References cited, 116.

VEGETABLES

EFFECTS OF TRACE METALS, OXYGEN, AND LIGHT ON THE GLUCOSE-GLYCINE BROWNING REACTION. G. S. Bohart and J. F. Carson, Nature 175(4454):470-71, March 1955. Three factors that affect rate of browning in the Maillard reaction were investigated: trace amounts of manganese or iron, oxygen, and light. Rate of color development is strongly influenced by these variables.

PROBLEMS IN PRODUCTION OF TOMATO JUICE POWDER BY VACUUM. V. F. Kaufman, F. Wong, D. H. Taylor, and W. F. Talburt, Food Technol. 9(3):120-23, March 1955. Two vacuum procedures have been developed on a laboratory scale for the production of tomato-juice powder. In one, high-density paste is converted directly into powder; in the other, serum and pulp are dried separately and then combined. The powders are easily hydrated with cold water. Data on permissible temperature and on addition of sodium bisulfite are presented.

APPARENT INHIBITION OF PHOSPHORYLASE-INDUCED STARCH FORMATION BY POTATO EXTRACTS (abstract). S. Schwimmer and W. J. Weston, Fed. Proc. 14(1, pt. I): 278, March 1955. Alcoholic extracts of potatoes contain several factors, including inorganic orthophosphate, oligosaccharides, and glucose, which interact with the system that synthesizes starch from glucose-1-phosphate in the presence of partially purified potato phosphorylase. These interactions change the starch-iodine complex used to detect enzyme action, but do not, as reported elsewhere, inhibit phosphorylase.

THE TECHNOLOGY OF POTATO GRANULE MANUFACTURE. R. L. Olson and W. O. Harrington, Amer. Potato Jour. 32(3):106-11, March 1955. Technical factors related to the "add-back" process (the only process in commercial use) including bulk density, flavor, color, and texture are reported. Research on relationship of processing variables to these factors is reviewed.

POTATO COMPOSITION. PHOSPHORUS COMPONENTS OF THE WHITE POTATO. S. Schwimmer, A. Bevenue, and W. J. Weston, Jour. Agr. and Food Chem. 3(3):257-60, March 1955. The solubilities of the barium salts and preliminary chromatographic analysis of the acid-soluble phosphates of two varieties of potatoes as affected by post-harvest storage temperature have been studied. In general the barium-soluble esters go through a concentration maximum (at the expense of the barium-insoluble phosphate) during storage. Five additional known phosphates have been detected.

SOME STUDIES OF HOP RESIN COMPONENTS INCLUDING THE SPECTROPHOTOMETRIC DETERMINATION OF HUMULON AND LUPULON. J. C. Lewis, J. F. Carson, and G. Alderton, Wallerstein Laboratories Commun.18(60):33-47, March 1955. A review and summarization of earlier work on humulon and lupulon, including spectrophotometric assay of the two antibiotics, extraction of hops, methods of analysis of hop resins, effects of maturity and drying on humulon and lupulon content of hops, isolation and chemical structure of lupulon and humulon. Thirty references are reviewed.

REACTION OF FRUCTOSE WITH ISOPROPYLAMINE AND CYCLOHEXYLAMINE. J. F. Carson, Jour. Amer. Chem. Soc. 77(7):1881-84, April 1955. From the reaction of fructose with anhydrous isopropylamine at 25°C., 2-isopropylamino-2-deoxyaldohexose (II, R=isopropyl) has been isolated in crystalline form. Reaction of fructose with anhydrous cyclohexylamine at 0° has yielded the crystalline 2-cyclohexylamino-2-deoxyaldohexose (II, R=cyclohexy) and 2-cyclohexylamino-2-deoxyaldohexosylcyclohexylamine (III). Evidence for the structure of the compounds is presented.

A METHOD FOR THE COMPARISON OF CONSISTENCY IN POTATO GRANULE SAMPLES APPRAISED AT DIFFERENT TIMES. E. R. Wood, R. L. Olson, and M-D. Nutting, Food Technol. 9(4):164-68, April 1955. A method is described by which samples of potato granules, appraised at different times, can be evaluated comparatively. Groups of 4 samples of reconstituted granules are ranked for "rubberiness" with two coded controls and each unknown is placed in a category in relation to these controls.

*CALCIUM-CHLORIDE AS A NONENZYMATIC BROWNING RETARDANT FOR DEHYDRATED WHITE POTATOES. M. Simon, J. R. Wagner, V. G. Silveira, and C. E. Hendel. (Two senior authors: Quartermaster Food & Container Institute for Armed Forces, Chicago 9, Ill.), Food Technol. 9(6):271-75, June 1955. Calcium-chloride treatment for dehydrated diced potatoes has proved helpful in control of heat damage during dehydration and browning during storage. Adequate amounts of calcium chloride do not impair quality significantly. Used with sulfite it was more effective than either of the two used separately.

*PRODUCTION OF POTATO FOOD PRODUCTS. Patent 2,705,679 to F. P. Griffiths, P. W. Kilpatrick, W. O. Harrington, C. E. Hendel, and R. L. Olson, April 5, 1955. Diced potatoes are contacted with a high velocity blast of hot air (120 to 160°C.) whereby the dice are expanded into hollow pillow-shaped pieces. The treatment also causes a cooking and dehydrating effect so that the products can be eaten directly and are an attractive, self-preserving product for out-of-hand eating.

*PROCESS OF PREPARING DEHYDRATED POTATO FOOD PRODUCTS. Patent 2,707,684 to R. M. McCready, R. L. Olson, and W. O. Harrington, May 3, 1955. Diced potatoes are cooked, frozen at a slow rate, then dehydrated. The slow freezing step causes a drastic change in the character of the potato tissue so that the dehydrated products exhibit an extremely porous, sponge-like, friable texture. As a result, the products are easy to prepare for the table in that they absorb water at a very rapid rate. This is in contrast to conventional dehydrated potatoes which absorb water very slowly because of their dense, hard structure.

*STABILIZATION OF DEHYDRATED VEGETABLES. Patent 2,709,657 to T. W. Campbell and G. M. Coppinger, May 31, 1955. This patent concerns the treatment of foods to protect the fatty constituents thereof from becoming rancid. Thus in the preparation of dehydrated vegetables, the vegetables while still moist are sprayed with an aqueous solution of a fat-stabilizing antioxidant, then subjected to dehydration. Alternatively, the vegetables are dehydrated in the usual manner, then packaged in cans containing a pad impregnated with a volatile fat-stabilizing antioxidant. By these means, oxidative deterioration of the fat content of the dehydrated products is minimized.

WOOL

AMINO ACID COMPOSITION OF NORMAL WOOLS, WOOL FRACTIONS, MOHAIR, FEATHER, AND FEATHER FRACTIONS. W. H. Ward, C. H. Binkley, and N. S. Snell, Text. Res. Jour. 25(4):314-25, April 1955. Amino acid analyses of normal wools of several breeds and geographical origins are presented as evidence of the normal variation of composition. Some samples were from lots used for detailed comparative studies of fiber properties and processing behavior. A mohair sample was found to be similar to wool in composition. White Leghorn chicken feather keratin differed from wool in yielding larger amounts of serine and proline. Feather had characteristically smaller amounts of cystine and glutamic acid.

FRUIT AND VEGETABLE CHEMISTRY LABORATORY, 263 South Chester Ave., Pasadena 5, California

PROPERTIES OF STORED FROZEN ORANGE CONCENTRATE OBSERVED BY DIFFERENTIAL CLOUD DETERMINATION. R. J. McColloch and R. G. Rice, Food Technol. 9(2):70-73, Feb. 1955. Differential cloud values are determined in frozen orange concentrate immediately after thawing and again after holding at 40°F. for over 24 hours. Low cloud values immediately after thawing reflect previous exposure to elevated temperature. Low cloud values after holding for 24 hours at 40°F. reflect "sensitization" of concentrate to cloud loss which follows prolonged storage even at temperatures below 0°F.

*PRODUCTION OF TERPENELESS ESSENTIAL OILS. Patent 2,712,008 to J. G. Kirchner and J. M. Miller, June 28, 1955. The patent concerns the removal of terpenes from orange oil and other essential oils whereby to improve the flavor and stability of the oil. The procedure involves adsorbing the oil on an adsorbent material such as silicic acid, eluting the adsorbent with hexane to remove the terpene constituents and finally eluting the adsorbent with ethyl acetate to obtain a solution of the terpeneless essential oil. By distillation, the terpeneless essential oil is separated from the eluting solvent.

FRUIT and VEGETABLE PRODUCTS LABORATORY, Prosser, Washington

EFFECT OF FRUIT HANDLING METHODS ON JUICE QUALITY OF APPLES. A. M. Neubert, G. H. Carter, and A. Van Doren, Food Technol. 9(3):114-18, March 1955 (with Washington State College). Post-harvest ripening was found to be the most important factor in juice quality of Jonathan, Golden Delicious, and Winesap varieties. Use of unripened Jonathan and Winesap permitted use of a considerably higher proportion of Delicious in preparing blends of uniform acid content without appreciable loss of flavor.